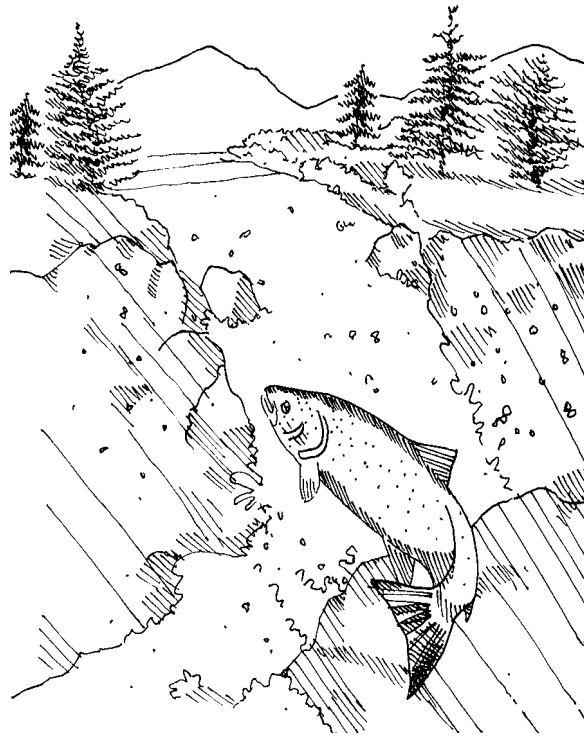


# Living With **Salmon** in King County

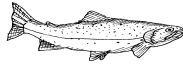


**A King County Wildlife Program  
Publication**

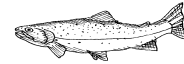
**Department of Natural Resources  
Water & Land Resources Division**

## **Sharing the Streams With Salmon**

Salmon are an integral part of the culture, ecosystem, and economy of King County. Native Americans revere them and appreciate their abundance. We are responsible for protecting and preserving the dwindling numbers of salmon, both as a food source and an important part of our Pacific Northwest heritage. Currently, there are several laws which help to protect salmon habitat and water quality. In addition, there are many things that **you** can do to keep salmon in our streams.



## What You Can Do



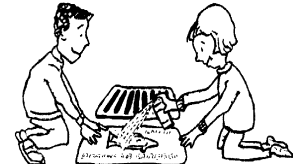
You are a part of the habitat that salmon depend on. Your personal choices and actions can impact them favorably or adversely. Simple, every-day practices can enhance streams for salmon.

### **Everybody:**

- ◆Dispose of toxic substances properly - call the Health Department Household Hazards Line for more info.
- ◆Decrease or stop using lawn chemicals and fertilizers.
- ◆Reduce lawn area and preserve natural soil and vegetation conditions. Landscape with native plants.
- ◆Wash your car on the lawn and sweep your driveway rather than hosing it off.
- ◆Get involved with community activities such as Water & Land Resource Division (WLRD) plantings and storm drain stencilling.
- ◆Keep litter and pets out of the stream.

### **Livestock Owners:**

- ◆Fence your streams and wetlands to limit livestock access to the water.
- ◆Keep manure away from streams.
- ◆Prevent trampling along stream banks.



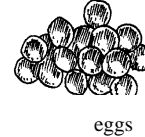
Fencing protects not only the sensitive stream-edge plant life, but also salmon and their habitat. Nutrients from manure encourage aquatic weeds to grow which choke stream channels and decrease oxygen needed by fish. The loss of plants along the streamside can increase the temperature of the stream and reduce hiding cover and invertebrate habitat, making it less hospitable for fish. If livestock enter the stream, they can stir up sediment, covering the gravels in which fish spawn and suffocating their eggs. With a farm management plan in place, you may be eligible for financial assistance to implement the best management practices.

- ◆Keep in mind, too, that people or their pets can cause the same damage that livestock may.
- ◆For other salmon and stream-saving tips, contact your local basin steward through WLRD.

A stream is the expression of its watershed. Whatever happens on the land will affect the waters. For the creatures that live in streams, requirements for life can be provided by nature or taken away by humans. Fencing and taking care of the water in **any** way can help to keep a in Northwest streams and are an indicator of the health of the stream and its watershed. As the land goes, so goes the stream; and so also, the salmon.

## Mysteries of the Deep

Salmon are anadromous, which means that they spend part of their life in fresh water and part in salt water. It takes so much energy for salmon to reproduce that most species spawn just once and then die. As they grow and mature, they use many different habitats, but they return to spawn in the stream that they hatched in. These streams must be clean, cool, and shady, with gravel bottoms and deep pools in order to be useful to salmon. Eggs are laid in freshwater streams, along lake shorelines, and in rivers. The young hatchlings, initially called alevin, then later fry, may move to other areas of the watershed such as up into small, intermittently flowing streams, wetlands, or ponds. In these places, they find food and can escape predators and fast flowing flood waters. Each area provides different foods such as invertebrates, plankton, aquatic or terrestrial insects and larvae, crustaceans, and smaller fish. As they grow, they change into an inter-mediate stage called smolt prior to reaching the sea and adulthood. While some waters have several species of salmon, not all species exist in every stream or river.



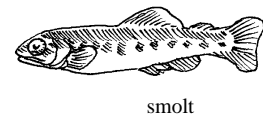
**Six major species of salmon** spawn in the waters of King County. Each species has distinct physical characteristics which make them recognizable, as adults, even at some distance.



**Chinook** (king) are the largest of the Pacific salmon and reach up to 80 lbs and 58" long. They spawn in larger and faster flowing streams and rivers. After hatching, chinook migrate quickly to sea and spend several years there before returning to their stream of origin to spawn.

**Sockeye** (red) salmon are King County's most abundant and visible type due to their large runs on the Cedar River and Bear Creek. They average 3 1/2 to 8 lbs and grow up to 33" long. They prefer fairly calm streams or rivers. Sockeye will usually spend a year in a lake before migrating to the sea. Sockeye that don't migrate to the sea are called kokanee.

**Chum** (dog) salmon don't stay in streams for long after hatching. They spend 3 to 4 years at sea before returning to their home streams near salt water to spawn. The average adult is 9 lbs and can reach 33" long. They spawn in waters of moderate velocity, such as the Green River.



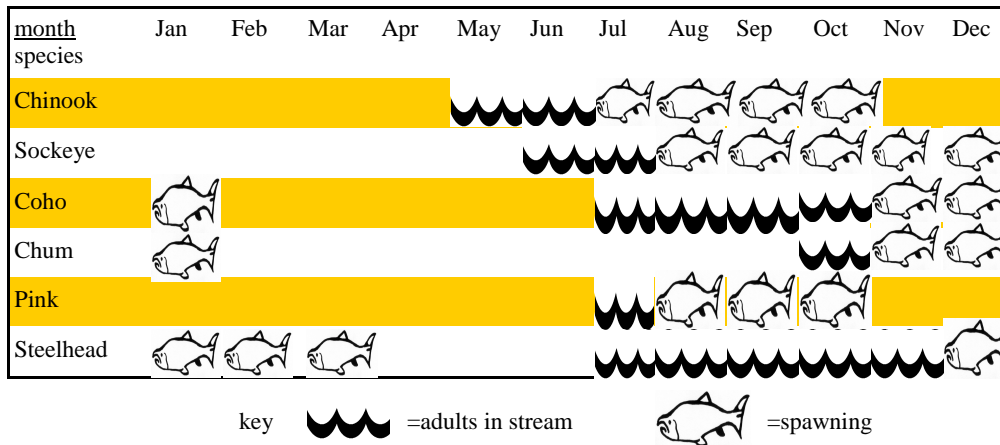
**Pink** (humpback) salmon have a rigid 2 year life cycle and spend most of that time at sea. They average 3 to 5 lbs and reach up to 30" long. For spawning, they prefer deep, fast moving streams.

**Coho** (silver) salmon live for their first two years in fresh water, then spend one or two years at sea. They average 6 to 12 lbs and grow up to 38" long. They spawn in various stream types and speeds. Since they are in fresh water for such a long time, they require small headwater tributaries for rearing.

**Steelhead** are the most popular game fish in this area. They average 10 to 20 lbs and grow up to 45" long. They may spawn more than once in their life, preferring shallows with moderate velocity. Their numbers have been decreasing dramatically.

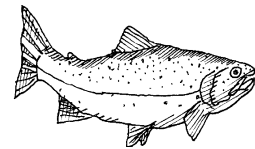
## If it's March it Must Be Steelhead

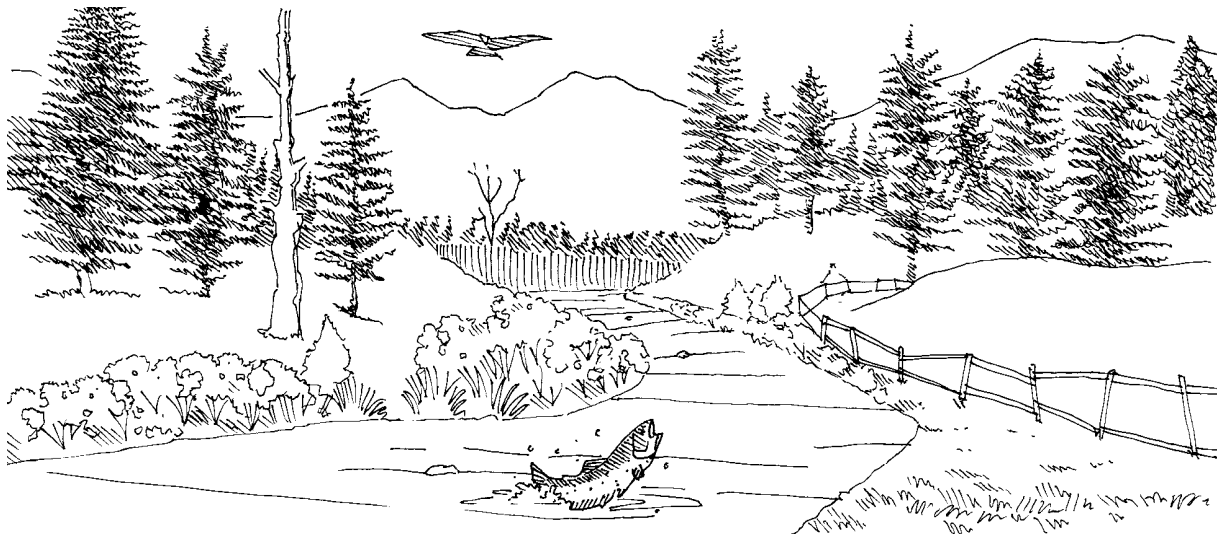
As each salmon knows which stream to return to, each species also has a specific spawning season. The timing for this is embedded in their genetic code. This chart shows when each type of salmon may be found spawning in streams in King County. The same species of salmon may be found in different streams at different times, so this is just a guideline to help you identify what type of adult salmon you may be seeing in a stream.



### What Are the Odds?

The survival rate of eggs in a salmon redd (nest) is low. Depending on the species, spawning females may lay from 300 (kokanee) to 10,000 (chinook) eggs in a season in up to 5 nests, with an average of 3,000 eggs per female. Of these 3,000 eggs, approximately 810 or 27% hatch. Only 81 or 1% of the fry survive to reach the ocean. Only 5 or 6 live to be adults. Of the entire batch of eggs, only 1 or 2 or 1/10 of 1% survive predation, competition, factory ships on the high seas, pollution, oxygen-poor reservoirs, dams, and loss of habitat to make it back to their home streams to spawn. With current management practices and habitat losses, the odds become stacked against many of our salmon stocks. Out of an estimated 1,000 stocks of native salmon in the Pacific Northwest, 106 are already extinct and another 314 are at risk. The situation is only a little better for local, King County populations.





### Esteemed Swimmers

Salmon have always been significant to the people of the Pacific Northwest. Salmon were more than just a vital protein source in early Native American diets. They were viewed as representatives of greater powers, deserving careful treatment.

The salmon were believed to be "...a gift from the Spirit who made the water and all creatures." They believed that "if people treat the salmon with respect and honor, the fish will return from their mansion beneath the horizon at the bottom of the ocean to sacrifice themselves so mankind can survive." (*Reaching Home: Pacific Salmon, Pacific People*)

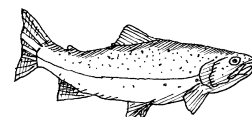
Today, through commercial fishing, salmon provide many jobs and are a favored part of our diet. They are also important for recreation such as sport fishing and wildlife observation.

Salmon play a vital role in the food chain for other wildlife such as osprey, bears, and bald eagles. This role is fulfilled both as live prey and as dead carcasses, or carrion. When salmon spawn and die, they return nutrients from the oceans to the upper watershed areas, enhancing and improving the richness of these areas.

"The salmon weaves through the life stories of nature's creatures and becomes the food, the sustenance, the life for fish, birds, mammals, and man. In thousands of streams and bays... the salmon come no more. When the salmon disappear, the birds, bears, orcas, and other creatures do too. And the web breaks." (*Reaching Home: Pacific Salmon, Pacific People*) It is a web of ecological elegance, and is the foundation of a great Northwest mythology centuries old.

### Where to See Salmon

- ♦Ballard Locks fish ladder - observe salmon returning from the ocean, interpretive display  
Seattle, WA (206)783-7059
- ♦Issaquah Salmon Hatchery - young fish, returning adult salmon, Issaquah Salmon Days (1st wknd in Oct.)  
Issaquah, WA (360)392-3180
- ♦Seattle Aquarium - fish ladder, young fish, observe salmonids in all life stages  
Seattle, WA (206)386-4320
- ♦Green River Hatchery - young fish, returning adult salmon, interpretive center  
Orting, WA (360)893-6440
- ♦King County Parks - call (206)296-4232 for more information about parks with salmon streams.



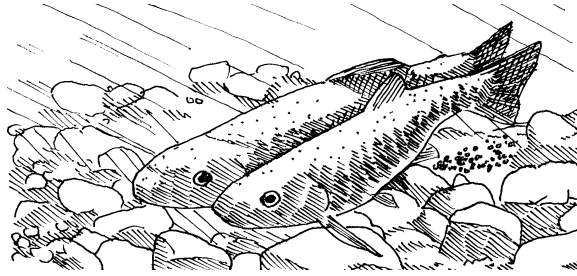
## Learn More About Salmon

Living with wildlife is an enjoyable part of being a resident of King County. The key to coexisting with wildlife is to understand them. You can learn more about salmon from these books:

*Field Guide to the Pacific Salmon*, 1992, by Robert Steelquist, Sasquatch Books, Seattle, WA.  
*Reaching Home: Pacific Salmon, Pacific People*, 1994, by Natalie Fobes, Alaska Northwest Books, Portland, OR.  
*Pacific Salmon Life Histories*, 1991, by C. Groot and L. Margolis, UBC Press, Vancouver B.C.

### Who to Call

*Water & Land Res.Div. & Basin Stewards*  
296-6519  
*King County Wildlife Program* (206) 296-7266  
*King County Livestock Program* (206) 296-1469  
*Household Hazards Line* (206) 296-4692  
*King County Dept. of Development and Environmental Services* (206) 296-6640  
*WA Dept. of Fish & Wildlife* (425) 775-1311



### Know the Laws

- ♦ Sensitive Area Ordinance - Before doing any work near a stream or wetland, call the King County Dept. of Development and Environmental Services (DDES).
- ♦ Hydraulic Permit Applications (HPA) - Any work within a stream channel may require an HPA. Call the WA Dept. of Fish and Wildlife (WDFW).
- ♦ Livestock Management Ordinance - A farm plan may be required if your livestock have stream access. Call King County Livestock Program.
- ♦ Fishing Regulations - Salmon fishing is only allowed in certain streams at certain times. Refer to the WDFW's Sport Fishing Rules pamphlet.



**For more information call the Wildlife Program at (206) 296-7266 or the Water & Land Resource Division at (206) 296-6519**

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